UNIVERSITY OF GOTHENBURG

DEPARTMENT OF EDUCATION, COMMUNICATION & LEARNING

# Satisfaction on an open online learning platform in Bangladesh

An exploratory study on the learner's satisfaction on the perceived ease of use and perceived usefulness of an open online learning platform

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| Thesis: | 30 higher education credits |
| Program and/or course: | International Master's Programme in IT & Learning |
| Level: | Second Cycle |
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| Supervisor: | Anne Algers |
| Examiner: | Linda Bradley |
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Abstract

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| Keywords: | Open online learning, online learning in a developing country, learning satisfaction |

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Purpose: The study aims to explore the satisfaction factors that affect the perceived ease of use and perceived usefulness of an open online learning platform from the perspective of both end-users, the learners and the organizers. This study will represent a picture of the open online learning platform's current status and future implications for improvements.

Theory: The technology acceptance model (TAM) has been used as a guide to structure the research and study what factors are affecting the perceived usefulness and perceived ease of use of the open online learning platform. A high level of learner satisfaction will help to create positive attitude towards e-learning.

Method: Both qualitative and quantitative methods are used to answer the research questions depending on the study's focus.

Results: Learners are more satisfied with some factors compared to others. To sum up, both learners and organizers face challenges related to communication and interaction. Technology acceptance theory has helped to structure the research. The satisfactions aspects that are affecting perceived usefulness and perceived ease of use are considered as unidimensional.

Foreword

I would like to thank my supervisor for their excellent detailed guidance and support during this process. I also wish to thank “10-minute school” team for their incredible support and fast response during the global pandemic's stressful time.

I also benefitted from debating issues with my friends and family. If I ever lost interest, you kept me motivated. My parents deserve a note of thanks: your wise counsel and kind words have, as always, served me well.

I hope you enjoy your reading.

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## 1. Introduction

The existing face-to-face learning paradigm is no longer the only educational paradigm due to the advent of e-learning that makes it possible to receive education without being restricted by time and space (Hyeoncheol et al., 2007). Instead of the enormous popularity of e-learning, statistics show that the e-learning market's revenue is decreasing worldwide (Statista, 2018). Moreover, the high dropout rates and delivery methods of online courses are currently heavily discussed (Reich, 2015). This discussion has sparked off a debate questioning the quality and the evaluation criteria of the existing format of e-learning. Even though individual learning process is not changing entirely in the new trend of e-learning, the circumstances and modes of learning and education are becoming more diverse (Stracke, 2017).

To add more, one trend in the mode of education is open education, which is considered as a human right and public good as defined in the Sustainable Development Goal no. 4 by the United Nations. Learning and education need to be changed to keep this status due to major global challenges (Stracke & Shamarina-Heidenreich, 2015). Significant milestones were the UNESCO declarations on Open Education and the policy on Open Educational Resources (OER) (UNESCO, 2012). In Europe, the European Commission supports it by communicating on "Opening Up Education" (European Commission, 2013), demanding a change in education and society.

However, online learning is still in its infancy for the developing countries due to some challenges despite its significant advantages in a developing country context. Open online learning (free of cost) can bring noticeable positive changes in any developing country's education system. Most studies on e-learning have been done within the context of developed countries (Tarhini et al., 2014). Moreover, online learning, particularly for underdeveloped and developing countries, is a relatively new education paradigm, and very little research has been done on the acceptance and evaluation of e-learning. Though some studies have been done on the feasibility, context, and culture regarding e-learning and developing countries (Tarhini et al., 2014), little research is focused on the end-users needs - the learners and the organizers, and instructors. To improve the e-learning experience, it is essential to shedding light on all user groups. Moreover, the pandemic situation at the beginning of 2020 convinced us to think and

rethink online learning platforms' acceptance and evaluation worldwide. Kreber stated this opinion regarding the importance of the advancement of our knowledge on online learning,

"Given the expanding interest and demand for online learning, coupled with the results of studies showing that higher levels of learning are not easily achieved in online courses, there is an imperative to advance our understanding of how to facilitate effective online learning activities (Kreber, 2006, p. 121)".

## 1.1 Purpose of the study

While the internet is a global tool, the efficiency of particular applications should also be measured locally since users usually work in local/national contexts (Li & Kirkup, 2007). With the role of open online learning platforms in a developing country like Bangladesh and its significance in improving equal opportunity for education for a broad target group, learner satisfaction is crucial for ensuring learning outcomes. This master study has been done on the largest platform in terms of the number of users and one of the pioneer online learning platforms in Bangladesh, which is free of cost. The business model of the platform is designed in a way that it will always be free for the students. The platform earns money from sponsorship and collaborations. The online platform is working as a support system that provides learning content according to the Bangladesh education system's formal curriculum. It is helpful for the students who cannot go to school regularly, do not have access to efficient teachers, and traditional education from school is not enough for their understanding.

To sum up, the online platform can serve the purpose of a tutorial class to fill up student's extra needs for free. Detail description of the platform will be given in the platform overview section for better understanding. Concentrating on a specific platform will provide more precise and particular insights and have a more defined target group. This study tries to understand the dimensions of learner satisfaction and how organizers are adopting to increase satisfaction. Hopefully, this study will be able to present a picture of the current scenario of e-learning satisfaction in Bangladesh and suggest some future implications to improve.

## 1.2 Significance of the study

Bangladesh has a vast population, which is expected to reach 170 million by 2020. The scalability property of e-learning can do wonders to improve the overall quality of education if appropriately utilized. Thus, it is significant to explore the learners' satisfaction and the challenges for the organizers and teachers as end-users of an open online learning platform of Bangladesh, which has vast reachability. The inclusion of all user groups gives an idea about the whole picture immediately. This exploratory paper can be used for further explanatory research. Moreover, the findings of the paper can contribute to improving the quality of the learning platform. Furthermore, this report can seek the attention of the sponsors who can contribute to the funding of the learning platform that is free for everyone.

Although some studies have been done on the prospect and current status of online learning in Bangladesh (Al-Masum & Chowdhury, 2013), there is a lack of research on the learner's satisfaction and stakeholder's challenges on a specific open learning platform.

## 1.3 Research Questions

In online learning, the learner and the educators' roles are quite different from face-to-face classrooms in many ways. This study has been done on a learning platform whose mission is to fill the formal education gaps where student's participation is not mandatory. Learners have to take the first initiative in e-learning activities when they feel that they need extra support in their study. It is essential to shedding light on what aspects can bolster their learning satisfaction to ensure online learning success. On the other hand, in this new learning paradigm, the educator's primary roles are to design, facilitate, and direct the learners at a time. The stakeholders of e-learning are learners, faculty, administrative and technical staff, and employers (Ozkan & Koseler, 2009). It is imperative to learn about the satisfaction among all possible e-learning platform stakeholders- learners, organizers, and educators. In this study, what is meant by the term organizers is the team that is responsible for different departments of the learning platform, including end-user support, technical team, etc.

Therefore, two research questions were imposed.

1. What aspects are affecting the learner satisfaction of an open online learning platform in Bangladesh?
2. How are organizers and instructors are addressing those factors, and how can they improve the learning experience?

## 1.4 Organization of the paper

- Chapter 2 presents a Literature Review. Specifically, it provides definitions and current research on e-learning.

- Chapter 3 describes the theoretical background which presents the theories related to the research work

. Chapter 4 gives an overview of the open online platform studied for the master thesis.

- Chapter 5 deals with methodology, a detailed description of how the research has been conducted, and ethical considerations.

- Chapter 6 shows the results from qualitative and quantitative data and critical discussion of the findings from the data

-Chapter 7 provides a general discussion on the study

- Chapter 8 presents the scope of the future work as well as the limitation of the study

# 2. Literature Review

This literature review aims to define online learning, open online education, and understand developing countries' contexts in terms of online learning and satisfaction dimensions that affect online learning success.

## 2.1 Online education

Online education has a history that spans almost two centuries (Spector et al., 2014). It is vital to have a clear definition of a field to understand the practices and characteristics relevant to the area. Moore et al. (2011) noted the need for clarity in the use of the terms of distance learning and online learning. The term ‘open online learning' is a better name for our field of study since it reflects the field's core assumptions: openness, accessibility, flexibility, massiveness, and quality learning opportunities (Bozkurt et al., 2015). Moore et al. (2011) defined online learning as

“Some form of instruction [that] occurs between two parties (a learner and an instructor), [that] is held at different times and/or places, and uses varying forms of instructional materials” (Moore et al., 2011,p.130).

Anderson (2008) defined the term online learning as " the learner is at a distance from the tutor or instructor, that the learner uses some form of technology (usually a computer) to access the learning materials, that the learner uses technology to interact with the tutor or instructor and with other learners, and that some form of support is provided to learners"(Anderson, 2008,p.16).

In most cases, technology is prioritized in studies on online learning, but pedagogy is also crucial as we can also define online learning as,

"Distance education ought to be regarded as education at a distance. All of what constitutes the process of education when teachers and students are able to meet face-to-face also constitutes the process of education when teachers and students are physically separated" (Shale, 1988, p. 334).

After the invention of world wide web 2.0, online education became very popular as it is easy to use, capable of presenting multimedia, expanded the field with innovations (Harasim, 2000). Later in the 21st century, there was a pragmatic shift that also changed the attitude towards online learning (Harasim, 2000). A wide range of users socializes in the new space altered the design and definition of online learning (Harasim, 2000).

From 2010, open education resources (OERs) came into light as a part of open online movement and mobile learning as new topics of study on online education along with older topics, such as collaborative learning and teacher training (Bozkurt et al., 2015).

## 2.2 Open Educational resources

It is always challenging to explain a concept with generalized terms that may have a different meaning. Similarly,

When it comes to open educational resources, some questions arise in mind to get a clearer idea, like "does 'open' mean openly licensed content, or does 'open' mean 'made public or 'open' mean 'free'? (Watters,2014).

The internet has allowed us to create and share more open educational resources. It is essential to understand what open educational resources is are to get the most of it. Johnstone (2005) stated

"By 2004, OER was defined to include:

- Learning resources - courseware, content modules, learning objects, learner support, assessment tools, online, and learning communities.

- Resources to support teachers - tools for teachers and support materials to enable them to create, adapt, and use OER and training materials for teachers and other teaching tools.
- Resources to assure the quality of education and educational practices."(Johnstone, 2005,p.16.)

The development of resource repositories and other services created a general awakening in the learning community (Downes, 2007). The goal of open educational resources is different in different contexts, which creates arguments about its sustainability. Larsen and Vincent-Lancrin (2005) said, "The open sharing of one's educational resources implies that knowledge is made freely available on non-commercial terms (Larsen & Vincent-Lancrin, 2005,p.20)".The purpose of open online learning is not always saving money. Open educational resources have a more comprehensive perspective, such as practicing knowledge within communities. Thus 'sustainable' may mean not merely financially cheaper but capable of promoting broader objectives (Downes, 2007). However, especially in developing economies environments where course completion rates are not as important, provision of resources in a particular manner may be favored because it is cheaper (Downes, 2007).

To sum up, further research is needed to examine the learning process in informal, non-formal learning environments as well as open educational resources to provide better learning opportunities. (Bozkurt et al., 2015)

## 2.3 Online learning in Developing countries

Online education can play a significant role to improve education and training levels in different sectors as e-learning reduces costs, enables consistent delivery of content, and improves tracking, among other benefits for faculty (Ruiz et al., 2006; Welsh et al., 2003; Zhang et al., 2004). Still, online education in developing countries is facing some unique challenges from developed countries (Bhuasiri et al., 2012). The objective of e-learning in developing countries is to provide basic education to many needy students (Bhuasiri et al., 2012) and provide quality education for the masses. The objective of e-learning in developed countries is different, which aims to develop a practical knowledge economy and enhance lifelong education (Gulati, 2008).

The e-learning literature indicates that “both external (social, environment) and internal sources (individual characteristics) are crucial for e-learning implementation” (Bhuasiri et al., 2012).

Due to some critical factors, online education in developing countries is still facing challenges for successful implementation. Moussa and Moussa (2009) identified some of the essential elements that are related to online education quality and barriers to implementing online education in developing countries.

“(a) Dependence on memorization instead of critically thinking, logically analyzing, objectively criticizing, and creatively proposing by the students at universities and especially at schools.

(b) Neglecting interactive teaching and teamwork in classrooms.

(c) Giving higher priority to quantity against the quality of material taught.

(d) Little effort to update existing curricula.

(e) Poor usage of modern technologies in and outside classrooms due to a lack of financial and technological resources.

(f) Lack of accreditation by internationally acknowledged organizations.

(g) Lack of measures for quality assurance of education and e-learning.

(h) The increasing number of commercialized schools and universities.”(Moussa & Moussa, 2009, p.32)

Moussa and Moussa (2009) also mentioned about social and political aspects in their study-

“(a) Governing politics varying between dictatorship and partial democracy with different interests in implementing progressive education and e-learning.

(b) Mass population

(c) Financial facilities differ dramatically between wealthy countries such as Kuwait and impoverished countries like Sudan.

(d) Technical and financial support from developed countries is very generous to some developing countries such as Israel and very poor to North Korea.

(e) The country's total area is from a huge area, for instance, for Nigeria, and it is tiny, for instance, for Bahrain.

(f) Several universities offering e-learning and their standards compared to international measures.”(Moussa & Moussa, 2009,p.33).

New requirements for modern online education require advanced high bandwidth technologies. Research says advanced high bandwidth technologies are more likely available for highly educated, high-income homes than in less educated, low-income households (NTIA CY 2002 Annual Report | National Telecommunications and Information Administration, n.d.).This scenario is typical for the

majority of the population of developing countries. That creates concerns about fulfilling the educational needs of the less educated, low-income population without access to the internet (McGee & Spiro, 1988). However, mobile internet availability and increasing popularity of mobile learning are contributing to solving these issues.

The main barriers for these learners addressed by research to have the open online educational facility are –

1. Low-level internet and device access,

2.Low-level digital literacy by the learners and program directors

3. The attitude towards online learning that these learners need personal interaction can only be provided by face to face interaction (Benson, 2007).

## 2.4 Online education Satisfaction

Several studies have been done comparing face-to-face learning and online education and found online learning as effective as traditional learning (McIsaac & Gunawardena,2004). However, "Whatever methods have been used to report the results of media comparison studies and their instructional impact, these studies have yielded very little useful guidance for distance education practice" (Gunawardena & McIsaac, 2004, p. 378). Hence, researchers changed their focus on design and other different factors that influence learning satisfaction. Some critical factors are considered for the satisfaction of online learning for both developed and developing countries. Hence, the design of e-learning applications deserves special attention, and designers need appropriate guidelines and sufficient evaluation methodologies to implement usable interfaces (Zaharias et al.,2002). Studies on distance education led to some critical data-driven suggestions for and about distance education: interaction is key to effective distance education; live human instructors are needed in distance education; the right mixture of human and technology seems most beneficial; distance education may be more appropriate for certain content; some learners may be more able to take advantage of distance education, and distance education seems to get better. (Zhao et al., 2005).

According to Benson et al. (2012), the satisfaction of distance and online education factors related to student pursuit of online study, student preparation for online research, student online course experiences, factors related to student success in online courses, and personal impact of online study (Benson et al., 2012). For this study, some specific satisfaction dimensions have been considered for a focused study, such as teaching, learning, user experience, and interaction. Academic compatibility and

facilitation also play significant roles in the perceived usefulness and perceived ease of use of any online educational platform.

***Learning Dimension***

Learning in an online learning platform is quite different from face to face learning. A typical outcome of a successful learning experience is that students should be satisfied with the experience (Marks et al., 2005). Endres et al. (2009) surveyed 277 students in an online MBA program in the Midwest (USA) and, using discriminant analysis, found that student satisfaction was determined by five factors: satisfaction with faculty practices, learning practices, course materials, student-to-student interaction, and course tools(Endres et al., 2009). On the other hand, Arbaugh (2002) recognized Perceived flexibility of the medium, perceived usefulness, perceived ease of use, media variety, prior instructor experience, virtual immediacy behaviors, and interaction as the main factors influencing learner satisfaction in online learning environments (Arbaugh & Duray, 2002).

Moreover, the learning quality is doubtful since there are no suitable tools to evaluate it in the case of online education (Zhao et al., 2017). However, some online educational platforms provide some certificates for study online. Still, these certificates do not specify any skill or knowledge level, so the certificates are not appealing to students (Di Chen et al.,2014).

***Teaching Dimension***

The significant advantages of online education lie in its flexible form to conveniently expand teaching scale and reduce teaching cost (Liao, Y. ,2015; Bruff et al. 2013). Nevertheless, it has been an obvious problem that how to select the right teacher's course for student' learning, so teaching quality assessment has been one of the most critical aspects in online education mode based on MOOC, and it has come to the attention of most university (Carlson, 2014; Daelen et al.,2016; Liao,2015). For example, the teaching method makes it difficult to measure the efforts that one student puts in the course (Di Chen et al., 2014). As class size expands, it is hard for instructors to give individual attention and progressive feedback in online classes (Bass, 2014). Most open online courses lack continuous tutoring and support for all learners who are expected to teach themselves (Daniel, 2012). Video content plays a central role in most online courses (Hansch et al., 2015, p.1). Video resources are challenging to evaluate in the online platform, seriously affecting students' learning efficiency (Zhuo et al., 2017). There is a lack of evidence to video's effectiveness for learning since the learning context is different (Hansch et al., 2015). The research findings indicate these key points- video dominates course content, video is expensive, the impact of production value on learning is uncertain, content expertise ≠ media and pedagogy expertise, and standardizing video production face many limitations (Hansch et al., 2015).

Moreover, the level of instructor involvement is perhaps one of the most defining differences between traditional face-to-face education and distance education. In face-to-face education, the instructor generally delivers the content live and interacts with students both in and outside class meetings. In contrast, in distance education programs the level of instructor involvement varies a great deal. In some distance education, the content is pre-programmed and delivered through some technology means without an instructor's actual involvement. Other distance education provides the content live and is available for interactions with students in very much the same fashion as face-to-face education (Zhao et al., 2005).

***Interaction Dimension***

Interaction is another term that is used more often in e-learning that has multiple meanings. Moore (1989) categorized interaction as “distance educators need to agree on the distinctions between three types of interaction; learner-content interaction, learner-instructor interaction, and learner-learner interaction (Moore, 1989). Educational software should take into account the different ways students learn and ensure that student's interactions are as natural and intuitive as possible (Ardito et al., 2006). At that point, most of the time, learning lacks face-to-face interactions between students and instructors, as well as among students themselves (Zhao et al., 2017). Moreover, in a study on different forms of online learning, students would instead take an online course that uses synchronous web conferencing lectures than an online asynchronous text-based lecture course (Skylar, 2009). This finding suggests the importance of interactivity on student satisfaction in a course.

It is possible to design interactive lectures for online education like famous massive open online platforms such as Coursera, edX, and Udacity provides the mechanism of interactive questions in lectures (Machun et al., 2012). Peer assessment is introduced to solve the problem, and peer assessment gives students the chance to learn by taking on the role of a teacher (Wilson, 2014). Research says that students who get higher scores spent more time in forum participation (Zhao et al., 2017). Moreover, students with different score level trend the same, students can share their opinions freely. Not like a traditional classroom, students may fear to talk about their real opinions in the forum because it may affect their final course score (Zhao et al., 2017).

To sum up, different levels of interaction should be taken into consideration for effective learning. Some facilitation tools have more advantages over others depending on the type of interaction. Thus, different mediums can be used for significant interaction. Moore (1989) provided an example of using different mediums for interaction; "The teleconference group is excellent for learner-learner interaction, and some types of instructor-learner interaction, but is frequently misused for instructor presentations be done better by print or recorded media. While correspondence gives superior learner-content interaction and

good, though slow, learner-instructor interaction, it gives no learner-learner interaction" ( Moore, 1989,p.5).To conclude, the tools for interaction have been changed over the years, but the main concept of effective interaction for education is expected to be the same.

***User Experience Dimension***

For evaluating the usability of e-learning systems, the following factors are considered: e-learning system feedback, consistency, error prevention, performance/efficiency, user's like/dislike, error recovery, cognitive load, internationalization, privacy, and online help (Wong et al., 2003). 11 Squires and Preece argue that researchers have not considered enough the implications of usability features of an educational application to achieve educational goals (Squires & Preece, 1996). If an e-learning system is not usable enough, it obstructs student learning: the learners would not spend more time learning how to use the software rather than learning the contents (Wong et al., 2003). The success of any training program is mostly dependent on the student's motivation and attitude. If a poorly designed interface makes them feel lost, confused, or frustrated, it will hinder effective learning and information retention (Kruse, 2000). Looking for a set of features specific for e-learning system interfaces, we can assert that they have to provide a comprehensive idea of content organization and system functionalities, efficient and straightforward navigation, advanced personalization of contents, and clear exit. An e-learning system should be pedagogically usable, though attractive and engaging (Ardito et al., 2006).

***Academic Compatibility***

The satisfaction of online learning is closely related to the learners' academic compatibility, which moderates the relationship between e-learning use and academic performance. Islam (2013) found that e-learning system use had a weak influence on students' academic performance (Islam, 2013). Hence, e-learning must be compatible with the academic context where the e-learning is provided. Benefits are materialized when the e-learning system is compatible with the course and students' learning styles (Islam, 2013) and academic compatibility; also have a profound impact on the success of e-learning. Since students have to initiate learning in an online learning environment, self-directed learning capabilities play a crucial role. For example, they should assess the extent to which the strategies are effectively facilitating their progress, and identify which content is optimal in terms of helping them reach their desired learning goals (Ackerman et al., 2016). A study comparing online dropout group and completers, figured out that the students who were more self-directed and capable of academic locus

control, which was known as students' beliefs about their control of academic outcomes, were more persistent in online courses (Lee et al., 2013)

# 3. Theoretical Background

Firstly, this study has been done on an open online learning platform, which can be considered as an online library of learning contents combined with evaluation and interaction functionalities. Students participate in the learning activities to fill up their knowledge gaps apart from the formal education. Hence, the student's self-directed learning capacities play a significant role in initiating the learning process. On the other hand, self-efficacy is also vital to teach and learn efficiently. In this kind, self-directed learning environment, self – efficacy can be a crucial component of academic success in distance education (Hodges, 2008)

Secondly, online learning is still a new concept in Bangladesh and not considered a mainstream form of education in contrast to face -to- face learning yet. Along with access to technology, there is a complex tangle of other reasons that play an essential role in adopting new approaches to online education, such as teacher training, learning style, computer-efficacy, student's expectation, satisfaction, and attitude educational compatibility, and so on. Either the side of the learners or the teachers and organizers, it is essential that they have a positive attitude and preparation to adapt this learning approach facilitated by technology and make sustainable use of it. Hence, research and evaluation of any new methods are noteworthy, particularly during the implementation and initial phases. For this study, Self-directed learning, Self-efficacy Theory and Technology Acceptance Model has been used as a theoretical framework.

## 3.1 Self-Directed Learning

Self-directed learning is a process by which learners manage their own learning process from beginning to end (Knowles, 1975). Knowles (1975) provides the most widely accepted definition with eight elements: (a) it is a process, (b) that is initiated by the individual, (c) which may or may not involve the help of others, (d) to identify their learning needs, (e) develop learning goals from these needs, (f) find

the necessary resources to attain these goals, (g) select and implement the proper learning strategies to meet their goals, and (h) determine how to measure learning outcomes. Self-directed learning strategy can help an online learner to engage more with the learning content and guide the learning by themselves.

## 3.2 Self-efficacy

The self-efficacy theory is based on social cognitive theory in organizational management from Wood and Bandura. An Individual's confidence in their capabilities to perform a specific task or skill is defined as self-efficacy. Wood and Bandura stated that self-efficacy refers to the belief in one 's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands (Wood & Bandura, 1989). So, the users (learners and organizers) need to be confident about learning and teaching online they have under certain conditions. Students with greater self-efficacy considered to be more ready for challenging learning environments like online learning where they initiate and manage the learning journey, do not get a chance to socially as well as academically interact face to face with instructors and classmates. If the learner and teacher believe that they can learn and teach online, that will lead to greater self-efficacy and online learning success, which is crucial for the success of online learning considering the study context.

## 3.3 Technology Acceptance model

E-learning relates to both pedagogy and technology, impressive strategies, and consideration needed for success. The technology acceptance model (TAM) is one of the most widely used models to evaluate new technology adoption. Fred Davis developed TAM in 1989 (Figure 1). The model is not about the technology itself; it's about the perception of people about technology. As E-learning is facilitated by technology, if users think it's too complex to access and communicate with e-learning contents, they will not use it. Here, technology is constant, but people's perception of technology changes depending on several factors, such as background, age, computer efficacy, etc. The technology acceptance model identifies two key factors that influence the acceptance of any informatics innovations: perceived usefulness (PU) and perceived ease of use (PE). The former measures if the users find the technology useful to improve their capabilities and goals, and perceived ease of use measures that it is easy to use that implies no effort. These two determents (PU and PF) can predict behavioral intension and actual usage of the system. When using the technology acceptance model in any educational context assisted

by technology, it is wise to consider the stakeholders, how much training is required for successful implementation, and barriers to use the technology and attitudes of the end-users.

Despite the reputation and predictive power of TAM, there are some limitations and constraints. Though this is a nature of any theory, one theory cannot explain everything, but looking at the limits and constraints leads to developing new theories and innovations. One of the limitations is that TAM assumes human behaviors as planned and rational and considered factors are unidimensional. Moreover, TAM does not provide any design guidelines and sufficient information from the designer's perspective. Limitations of sample size, homogeneity of samples, cultural dimension, the region of the samples, moderating variables, missing data, and specification of research are some of the limitations summarized in the study of Aggorowati et al. (2012) after analyzing 108 journals. However, several versions of TAM have been introduced, taking into consideration the significance of other external variables on the key factors (PU and PE) such as TAM2 (Venkatesh 2000) and later TAM3 (Venkatesh & Bala, 2008).

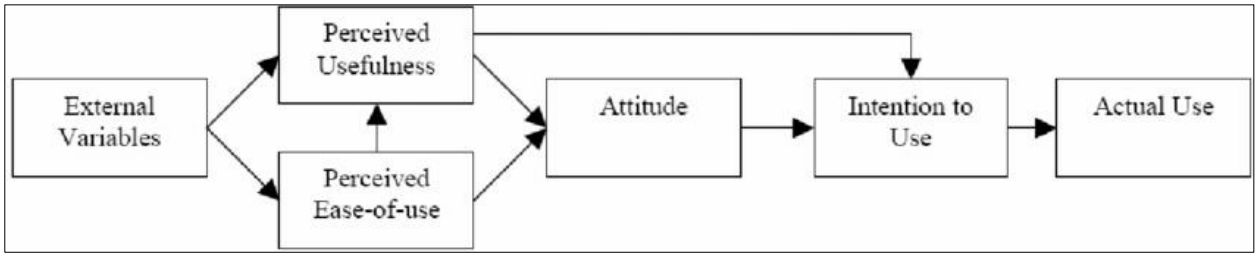


Figure 1 Technology Acceptance Model (TAM) (Davis, 1989)

**TAM2**

Two more determinants external variables of PU: social influences (subjective norms) and cognitive instrumental processes (job relevance, image, quality, and result demonstrability) have been added to the extension of the original TAM. Moreover, perceived ease of use is considered as a direct determent of perceived usefulness in TAM 2, which was developed by developed by Venkatesh & Davis (2000). Experience and voluntariness are taken into consideration as moderating variables that can affect other determent variables.

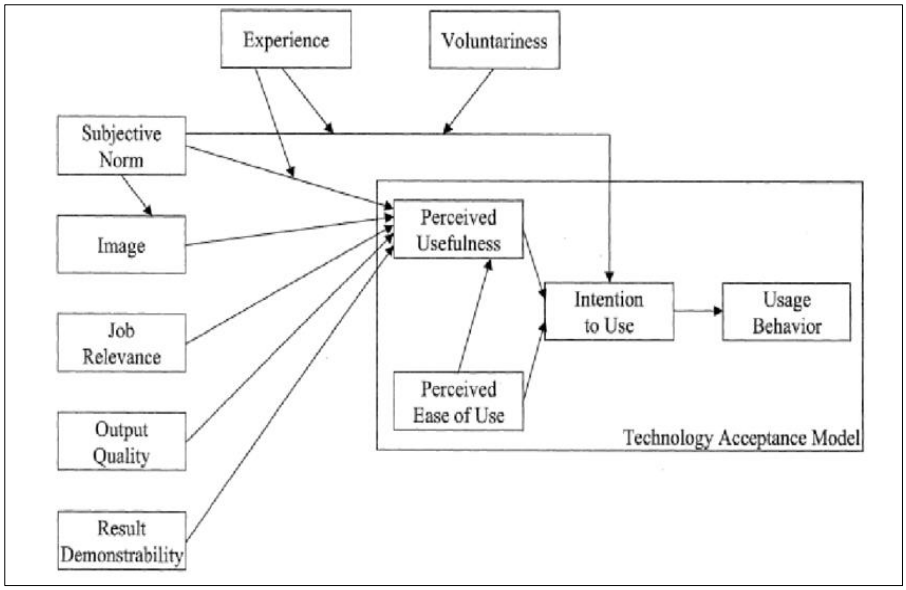


Figure 2 Technology Acceptance Model (TAM 2) (Venkatesh and Davis, 2000)

**TAM 3**

Venkatesh and Bala (2000) extend a new version of TAM called TAM3 that focus more significantly on perceived ease of use based on building on anchoring and adjustment framing of human decision making. Venkatesh (2000) argued that individuals would form early perceptions of the perceived ease of using a system based on several anchors related to individuals' general beliefs regarding computers and computer use. The anchors suggested by Venkatesh (2000) are computer self-efficacy, perceptions of external control (or facilitating conditions), computer anxiety, and computer playfulness. However, too many relationships with the variables make this system quite complicated (Black, 1974).

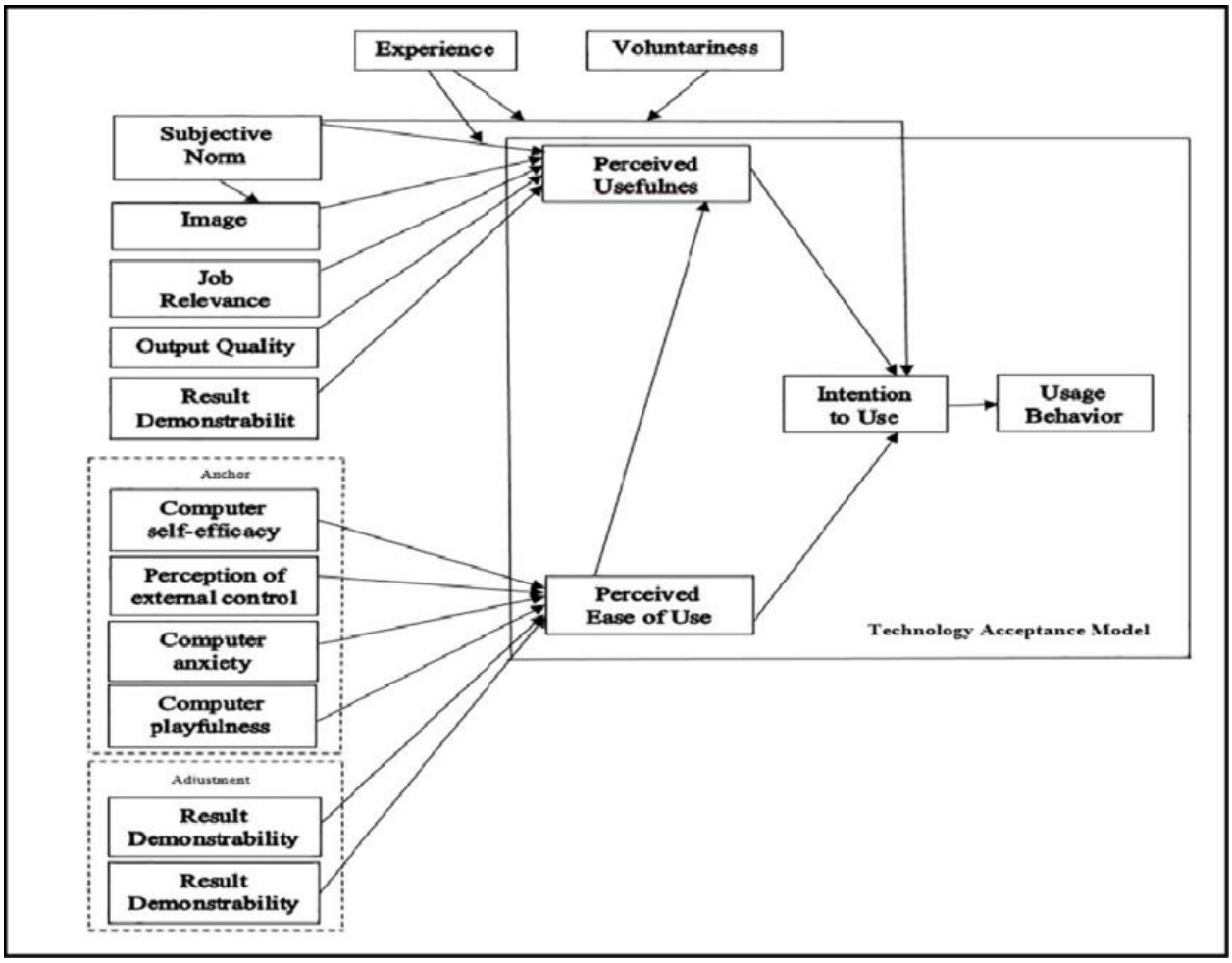


Figure 3 Technology Acceptance Model (TAM 3) (Venkatesh & Bala, 2008).

In this study, a framework has been guided by the Technology Acceptance Model (TAM) to have a structured and profound analysis and evaluation of the proposed learning platform. The original version of TAM has been chosen for this exploratory study because it is simple and easy to understand. The satisfaction dimensions have been selected from the literature based on context and compatibility with the research design. Two dimensions- learning and teaching satisfaction are considered under the perceived usefulness of the system. On the other hand, the other two dimensions- interaction and user experience satisfaction- are considered under the tree of perceived ease of use. Since this study has been done on educational context mediated by technology, academic compatibility has been added as a determinant of perceived ease of use. As the endpoint is the actual use of the platform, technology facilitation is also a significant factor that is also considered. However, this framework (The framework illustrated in figure 4) has been made to structure this research work. All the satisfaction dimensions and factors may have several non-linear relationships with other elements. More in-depth research work is needed to propose an improved framework.

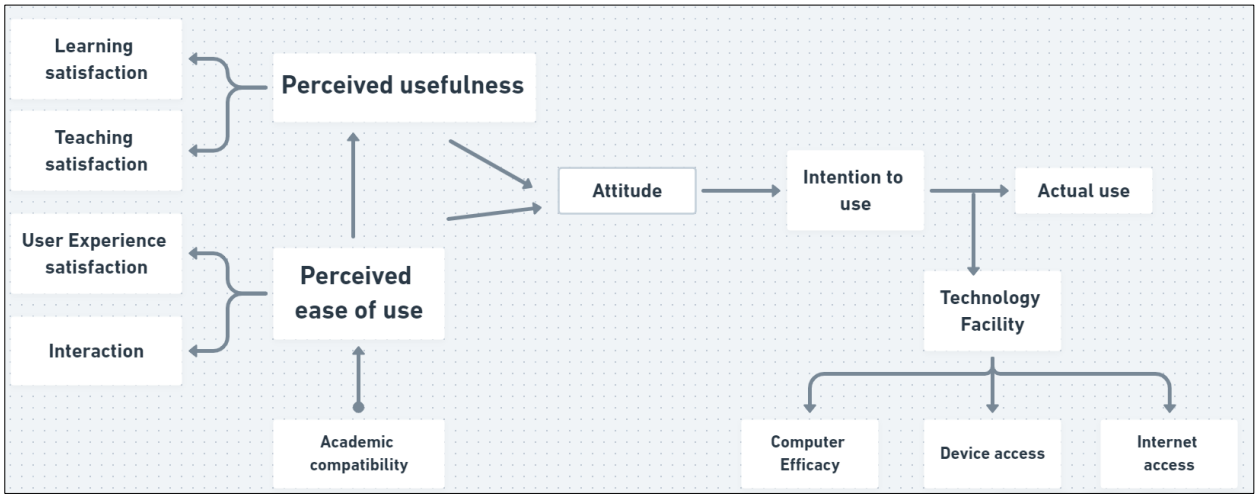


Figure 4: The framework guided by TAM to evaluate the satisfaction of the open online learning platform (Based on Davis,1989).

## 4. Overview of the platform

This study has focused on one specific open online learning platform of Bangladesh named 10- minute school. A brief overview of the platform will help an overview of the research context. 10-minute school is an open online education platform founded in 2015. Initially, it was a self-funded project. Later it was sponsored by one of the telecom operators companies and the Education Ministry of Bangladesh. The basic features of the platform that make it unique are that it is designed for the context of Bangladesh and open for all as well as delivered in the local language. To add more, the platform has vast reachability. 10-minute school offers an extensive library of educational material from the school and college students (up to k-12) of Bangladesh. They also have some content for skill development, such as software tutorials to learn Microsoft PowerPoint, Microsoft Word, etc. that are necessary for the students.

10- minutes school has a growing set of structured educational material in the form of short, free publicly available video clips on the internet based on Bangladesh's educational context.

Though some of the universities in Bangladesh have online learning facilities using learning management system, schools and colleges still depend on face to face learning entirely. Therefore, an

open learning platform like 10-minute school can help the students to fill up their knowledge gap in the form of extra training along with the formal education they get from the schools.

Considering the current scenario of Bangladesh in which teachers shortage in remote areas, inadequate teacher training, and high dropout rates in schools, such open online learning platforms can play a vital role in improving the overall quality of education all over the country. An increased number of smartphone users is playing a crucial role in solving the problems related to IT infrastructure by promoting mobile learning.

Table 1 Overview of the learning platform

| Domains | Contents | Instruction process |
|---|---|---|
| Academic section (Grade1 to 12) | Video Tutorial | Synchronous- Real-time class using social media and Asynchronous- Recorded video Tutorials |
| Skill development | Video tutorial and blogs | Synchronous- Real-time class using social media and Asynchronous- Recorded video Tutorials |

***Learning Design***

10-minute school has both web application as well as a mobile application. Besides that, they are using social media to take real-time classes and interaction through their official pages.

Students have to take the initiative to register in their system. After logging in, they choose their desired modules according to their grades and interest and start watching short videos covering different national curriculum subjects, for example, math or physics. After completing a video, they take part in the assessment provided by the platform. Assessments questions are multiple-choice questions. After completing the assessment, they can view their score and the average score of the assessment. Moreover, the platform regularly arranges real-time classes via social media, where students can interact with the instructor in real-time. However, here they don't have the opportunity to get detailed individual feedback. The platform is currently not proving any certificates after completion. There is no dedicated forum for interaction in the platform. Students mostly communicate through the official pages of social media.

***Business model***

The organizer plans to keep the platform always free of cost for all for the time being. The online platform manages its funding from sponsorship and promotional activities. Moreover, they also sell a learning management system as a SAAS, which is developed by their technical team to different educational and corporate institutions to manage finances. Currently, the platform is connected to 18,000 schools with the help of the Government's ICT support. Their main goal is to connect with all educational institutions and deliver quality education all over Bangladesh. Shortly, they want to implement modern technologies such as virtual reality, education games, science shows, and design a more personalized learning experience to make the learning experience more enjoyable for the learners.

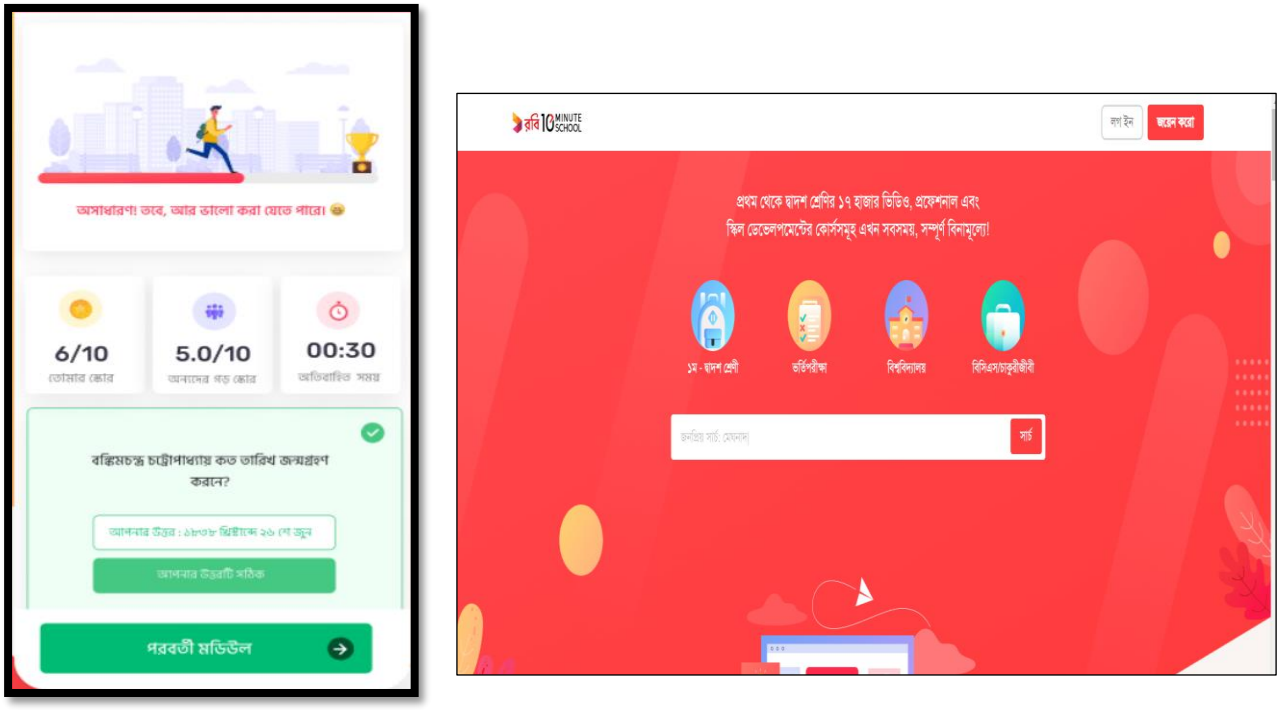


Figure 5: Interfaces of the online learning platform "10-minutes school."

# 5. Methodology

This chapter contains an explanation of how the research was conducted in this thesis. It begins with a discussion of the research methodology chosen, followed by a presentation of how the research process was carried out. The study has been done to describe the aspects affecting learner satisfaction of the "10-minute school" learning platform and how the organizers and instructors are taking care of those factors. In general terms, satisfaction is considered as the sum of one's feelings or attitudes toward a variety of factors affecting the situation (Legris et al., 2003). The research method has been chosen carefully after considering each method's advantages and disadvantages and the situation. Yin (2003) suggests distinguishing the advantages and disadvantages of each strategy depending on three conditions- (1) type of the research question, (2) control of investigator over the behavioral event, and (3) focus on contemporary and historical phenomena (Yin, 2003). This research is conducted during the Coronavirus pandemic; all sorts of physical meetings have been avoided. A mixed-method has been chosen to conduct the study after considering several reasons (Figure 6). The quantitative approach has been selected to describe what aspects affect student satisfaction, and the qualitative approach has been chosen to explain how the organizers are taking care of those aspects. The mixed-method has been chosen to broaden understanding by incorporating qualitative and quantitative research by using one approach to understand the other approach better, explain and build on the results from the other approach Creswell and Creswell (2017).

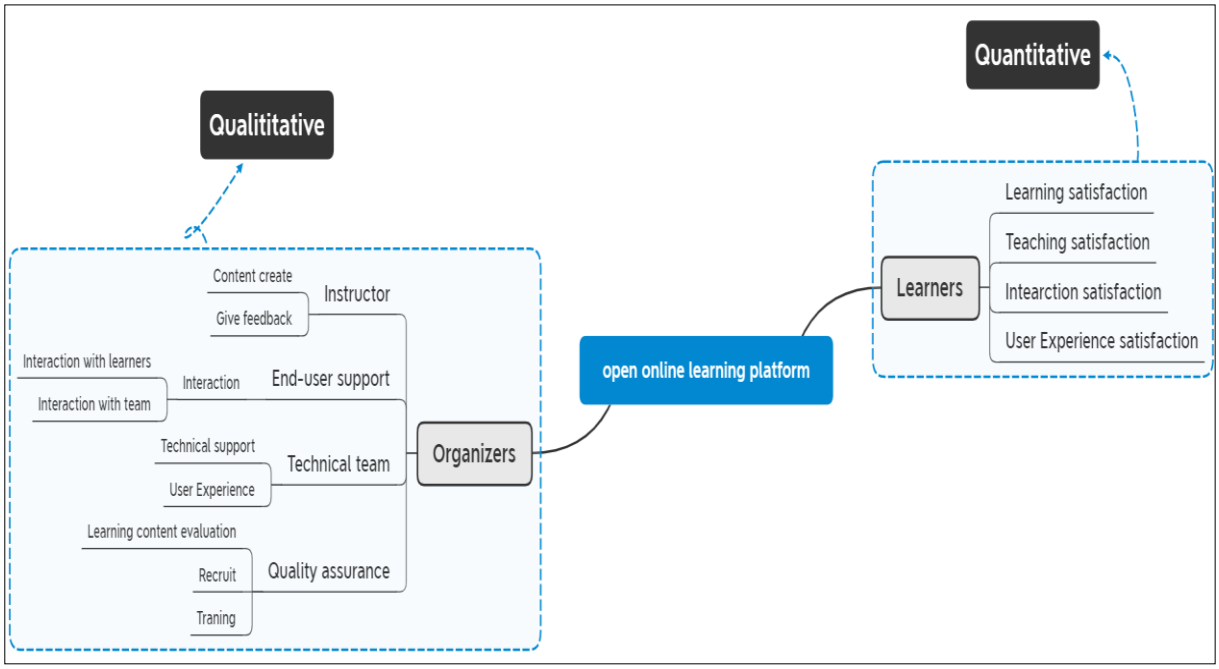

Figure 5: Methodology of the study

To meet the goals and purpose of the study, three steps have been adapted initially. Firstly, a survey was sent to the learners who were using this platform. Then the interview was taken with the organizers as well as instructors. The interviews were inspired by the survey results so that the interview participants can comment on students' views. Finally, an analysis and evaluation of the learning platform satisfaction have been done from the quantitative analysis findings and the qualitative analysis of the interview's scripts.

## 5.1 Data Collection

### *5.1.1 Survey*

A self-designed online survey inspired by the TAM validated questionnaire was used to get an overview of the learners' satisfaction on the selected dimensions of the online learning platform as well as to collect demographic information about participants. The first sections included questions regarding learners' satisfaction in four dimensions: learning, teaching, interaction, and user experience. This section included five Likert-type items developed to assess learners' perceptions of those dimensions. The second section of the survey included questions meant to gather data regarding learners' expectations with the learning contents well as their device information that they are using to reach the contents. The third section included questions about three demographic factors: age, gender, and the profession of the participants. A survey questionnaire was posted on the system. Learners were notified after logging into the system about the survey and insisted to fill it up. There are about 5 Lac + registered members on the platform. A fair amount of responses (1014) have been received in 7 days.

### *5.1.2 interview*

Semi-structured interviews are regarded as the most widely used format for data collection in qualitative studies (DiCicco-Bloom & Crabtree, 2006). In this study, the interviews were semi-structured. At first, a list of issues that were planned to discuss was presented before the organizer's representative. After going through the list, he came up with the list of the resource persons (Project leader, end-user support, CTO, and leader of the quality control team) who was best informed about the presented issues. The reason for using this method is that it will help to get the most appropriate answers from the experts as employees of one department often do not have sufficient knowledge about another department. That may lead to the scope for bias and interviewing the people with the same views. Moreover, there is a

possibility that organizers might be biased towards the platform. To overcome this problem, we have tried to reach different departments with the same questions and understand their thoughts. The interview questions were prepared in advance based on the dimensions (learning dimension, teaching dimension, interaction dimension, user experience dimension), and inspired by the survey results. Both open and closed-ended questions were asked (appendix). However, priority was given on open discussion so that the participants can share their ideas freely. That helped to address some more external factors that are affecting the acceptance and success of the learning platform that was not present in the pre-listed dimensions. All the interviews were done online due to the Covid-19 pandemic situation using Zoom and recorded with the interviewee's permission. Moreover, interviews were taken in Bengali (the native language of the research location) for the discussion's convenience. Later it was translated into English for better readability. The author did the transcription and translation of the interviews due to time and financial constraints for this master thesis. However, the credibility will improve if it was possible to compare with the work of another researcher (Kvale & Brinkmann, 2014) from the notes taken during interviews. The interviews were carried with the consent of the CEO and founder of the organization. Since no personal questions had been asked, there is no concern with personal data privacy for this study. Participants role have been presented in the table (2),

Table 2 List of the participants

| Name | Description |
|---|---|
| 1.Leadership | This role represents the top leadership position of the organization |
| 2.End-user support | This role mostly concerned with the end-user support and end-user interaction |
| 3.Quality assurance team | This role is the team leader of the quality assurance team. His team concerns with teaching contents, learning materials, and evaluation |
| 4.Technical support | This role manages the technical support teams. |

## 5.2 Ethical consideration

Consent was taken from the “10-minute school” authority before doing the research. The authority was well informed about the purpose of the study. The organizers agreed and supported through the whole research work by helping the author to do the survey from their platform as well as organizing the online interviews with the right resource person. Moreover, all the interviewee's consent was also taken before

each interview. No personal questions were asked during the interview with the organizers. The survey link was published in the learning platform; the learner's answers were anonymous and voluntary. The research work has been done online without any face-to-face meeting considering the pandemic situation.

# 6. Results

This empirical part of the study will be presented in the order of conducting quantitative and qualitative analyses. First, following with quantitative analysis of the survey data using descriptive analysis (learner's satisfaction dimensions) and then qualitative analysis of the organizer's interview data (how organizers are taking care of the satisfaction dimension). The reasoning here to see in contrast what aspects affect learning satisfaction and how organizers are taking care of those aspects. In the later section, data regarding learners' expectations with the learning contents well as their device information that they are using to reach the contents have been added to get some more insights into the platform.

## 6.1 Quantitative analysis

The descriptive statistics are used to summarize the data in a compact form and presented in tables and other graphical forms, which will allow for patterns to be discovered, which are not apparent in raw data (Hussey et al.,2013). For this study, it is fair to start the analyses with the calculation of frequency(N), mean, and standard deviation values and show the percentage calculated from the Likert-type items developed to assess learners' satisfaction on the selected dimension for the study.

**Demographic data from the survey**

### *6.1.2 Age*

86.9% of the (5 Lac+) registered participants are from the age group 15 to 20 years, 11.2% are from the age group 21 to 25 years, and the rest are above 25 years

### *6.1.3 Gender*

Table 3 Gender percentage of the survey participants

| Male (%) | Female (%) | Prefer not to say (%) |
|---|---|---|
| **56.7** | 41.4 | 2.5 |

**Satisfaction Dimensions**

The survey questionnaire was designed based on a five-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (5) marked in table 3. The higher scores learners had, the higher level of satisfaction was predicted, whereas the low level of scores was indicating critical issues.

Table 4 Survey results from the learners about satisfaction dimension

| Satisfaction Dimensions | Item on grit-scale | Disagree and strongly disagree (%) | Neither agree nor disagree (%) | Agree and strongly agree (%) | Mean | SD |
|---|---|---|---|---|---|---|
| Learning dimension | The quality of the learning contents is good | 5.9 | 9.6 | 84.6 | 4.19 | .940 |
| | 10-minute school help me to get a good score in the school examination | 5.8 | 9.4 | 84.9 | 4.19 | .979 |
| | The learning platform is helping me to achieve my personal | 6.4 | 14.8 | 78 | 4.16 | 1.004 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | learning goals to learn new skills | | | | | |
| | The learning evaluation technique (self -assessment) is satisfactory | 13 | 10.9 | 75 | 4.02 | 1.171 |
| Teaching dimension | I can understand the concept of the learning content well. | 5.9 | 9.6 | 84.6 | 4.37 | .979 |
| | I receive individual feedback from the teacher | 20 | 25 | 55 | 3.20 | 1.375 |
| Interaction dimension | Social media groups help me to interact with other learners as well as the instructors | 23 | 21.1 | 55.9 | 3.50 | 1.300 |
| | I can easily interact with other learners and instructors | 52.5 | 20.7 | 26.8 | 2.61 | 1.336 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Instruction guidelines are helpful | 5 | 7.2 | 84.2 | 4.4 | .976 |
| User experience dimension | It is easy to use "10-minute school" website | 10.7 | 10.1 | 79.3 | 4.15 | 1.145 |
| | I can easily find desired learning content | 13 | 10.9 | 76 | 4.02 | 1.171 |
| | Registering process for "10 -minute" school is easy | 7.2 | 12.3 | 79.5 | 4.01 | 1.031 |

### *6.1.4 Future content expectation*

The survey includes a section that asks about the contents module that learners want to be available more in the platform. Table 5 demonstrates the content demand of the learners.

Table 3 Content expectation of the learners

| **Academic (%)** | **Skill development (%)** |
|---|---|
| **56.2%** | 23.5% |

#### 6.1.4 Device

Table 6 represents the data about the devices learners are using to access the learning platform.

Table 4 Device that learners are using

| Mobile (%) | Laptop (%) | Personal Computer (%) | Tablet (%) |
|---|---|---|---|
| **89** | 3.6 | 2.2 | 5.2 |

## 6.2 Qualitative analysis

According to Mayring (2014, p. 39-41), qualitative content analysis needs to be adjusted and customized to fit the specific research questions. The coding and transcribed interview materials of this thesis structured considering to the factors of satisfaction dimensions (1. Learning, 2. Teaching 3. User experience, 4. Interaction) that have been chosen for this thesis to answer the research question two;

How are organizers addressing those factors, and how can they improve the learning experience?

The representatives of the organization were participated in the interview.

### *6.2.1 Learning Satisfaction dimension*

**Attitude**

When the organizers were asked about their opinions on students' overall e-learning, they had a mixed opinion.

> Leadership- "positive! We receive appreciation from the learners that we helped them to achieve a good score in the exam. Initially, they were doubtful about it is possible to learn online, but now they are more confident."
>
> End-user support- "Not so positive yet. Still, much improvement is needed."
>
> Quality assurance- “Overall positive attitude. Searching google for learning material trends helped a lot.”
>
> Technical support- “online learning still not a form of mainstream learning. learners do not have the habit of learning online."

Organizers were also asked about how they are motivating the learners,

> "Reward/point-based evaluation system to motivate learners extrinsically. Moreover, we arrange completions and motivate the winners by rewarding them in the face to face sessions. These sessions help us to know the learner and their parents more."
>
> "Display the personalized contents as per their search history to learn in-depth and promote self-paced learning according to their interest. This helps learners to be intrinsically motivated to learn the contents they are interested in."

***Evaluation method***

When asked about the platform's examination process,

" only multiple-choice questions are used to evaluate the learning,"- replied responsible person from the quality control department.

Quality assurance- "Multiple choice questions mostly. They can see the score of the other course takers and compare their results average number showed. Correct answer with an explanation is also provided. They also get some guidelines if they need to take the lesson another time."

Learning theory or template followed by the organizers

When the organizers were asked about if they follow any specific template or learning theory

> Quality assurance- "The instructor receives basic content mapping. They choose topics and subtopics. They are given a demo of the standard lecture from experienced instructors. They are inspired to design interactive sessions."
>
> "We have five level error scaling on the learning materials to ensure the quality-
> 5. Concept
> 4.misapproprication of analogy/terms

3. Content- either it is surface-level learning
2.spelling
1.pronunciation”

### *6.2.2 Teaching satisfaction dimension*

Feedback from the organizers to students

The responsible person from the quality assurance team describes how the students receive feedback as follows

> Quality assurance- “depends on the product-mostly we use social media for interaction
> real-time classroom- real-time messaging
> recorded video- comment section
> Interactive textbooks- current answer with explanation
> Social media groups- learners can post their questions, and the instructor gets back to them."

Time spent on preparing the learning contents

The organizers were also asked about the average time spent on preparing learning contents for the instructors

> Quality assurance - “It depends on the instructor. If they are experienced, they already have their materials. For new teachers, it takes time. Most of the teachers are part-time. So, they take their classes based on their schedule. In our studio, we give them 3 hrs. To record 40 min sessions. Mentioned at that time, they already have their content ready.”

Finding the right resource person for teaching online, organizers say

> Quality assurance- “We are very strict about the recruitment process and have multiples steps.
> Recruitment stages-
> Basic aptitude test
> Interview session with subject expert

Internship 3 month
Confirm job after three months if performance is good."

### 6.2.3 Interaction satisfaction dimension

Most feedback/responses from learners are about -

Organizers shared the most received feedback from the learners-

End-user support- “trouble with content finding, content request, application bugs questions regarding learning content."

The way organizers handle the feedback/responses from the learners.

End-user support - "End-user team helps them to find the content they are searching for or if they have any user issues using the platform. We have eight contributors for 2 hours slot. We must respond within 30 min.
Technical issues we pass to the technical team. It usually takes from half an hour to 2 hours max solve to technical issues. Regarding learning content, we tag the instructor in the comment. It takes a maximum of 2 hours to solve the problems regarding learning content."

### *6.2.4 User Experience Dimension*

When the organizers were asked about the feedback from the learners about user experience

Technical support-
"Technical team do not have direct contact with the end-users. We get their feedback via the end-user support team."

"most technical issues we face related to server/application."

“We do not get appropriate feedback about technical issues from the learners. The computer literacy of the target group is not so good. Sometimes they could not recognize the problem; for example, either it is a server error or network issues".

**User Experience research**

When organizers were asked about how they conduct user research to improve the user experience

> "We track user activity to get an idea about user experience. For example, how many people could not log in or did not get verification code to log in
>
> Positive and negative test scenarios
> A/B testing
> Direct feedback from social media
> Play store feedback
> Offline sessions”

**Technology facilitation**

The organizer's statement about frequently faced technical issues and solutions

> Technical support-
> “Servers become busy due to sometimes and could not take the load, application bugs."
>
> "It is not a big problem for us. We have a skilled in-house technical team. In case we cannot solve any technical issues, we take consultancy services. However, we pass through different layers; communication gaps occur sometimes”

When the organized asked about how they keep the platform technically updated with the modern technology

"Attend seminar
Follow what model companies are doing.
Follow open-source platforms
Take consultancy services."

To sum up, though all the interviewees did agree on some facts, they all agreed that communication is their biggest challenge for the time being. Here they have meant all types of communication, such as communication with learners and within teams. Gender imbalance, privacy, and the platforms' validity are common concerns organizers have to work in the future. The organizers are now mostly concentrating on the user experience of the mobile application. However, they are not conducting any end-user research currently to improve the user experience.

## 7. Discussion:

***Demographic factors***

The quality of education is not the same all over the country. The overall quality of education in the schools situated in remote areas is poor compared to the quality of education provided in the schools in urban areas. To ensure the same quality education all over the country is one of the main visions of the platform. They are working to scale the platform for a larger population to reach users all over the country. The main barriers might be infrastructure, poverty, ignorance, and so on. Research indicates, "Many students do not even have access to electricity, telephone, radio, and television, which makes the use of ICT still a dream" (Al Masum & Chowdhury, 2013, p. 88). Data shows that 89% of users are using the platform using mobile devices. Increased use of mobile internet, renewable energy sources are now started to contribute to reaching learners in remote areas. Integrating with a traditional educational institution with ICT support will be beneficial for reachability until remote regions. This can contribute to ensuring quality education at the national level to a great extent. Research indicates that to overcome educational inequalities, distance education methodology and open learning principles have great potential in Bangladesh (Rahman et al., 2015).

***Age***

Most of the learners are from the age group 15 to 20 years, which is logical. First of all, the platform's target group is secondary, and higher secondary school level students. The participants of two board

examinations of the Bangladeshi education system also belongs to this age group. However, the platform has started developing some content for other age groups, including children, and lifelong learning content for adults, which has not been studied. Ethical considerations and appropriate contents for the learners who are not adults are some areas that need more consideration. To motivate the learners, validity, trust, and transfer of knowledge can be considered a field of improvement. Collaboration with formal educational institutions such as universities or training institutions might help gain more validation and trust from the adult learners.

***Gender***

The survey results show a greater percentage (40%) of male learners compared to female learners. If compared to the national literacy rate, some disparity of data can be seen at this point. The national literacy rate of Bangladesh in 61.28% (male) and 56.87% (female). This inconsistency of data creates an opportunity for further research. No research has yet been on gender inequalities on online education in Bangladesh. Therefore, according to the organizer's statement. There might be two possible reasons for the differences between the number of male and female users. Firstly, females may not have the same access to technology as males (device and internet). Secondly, culture and cybersecurity concern maybe not allowing females to use technology for learning. Creating more trust in online education and cybersecurity training sessions with both female learners and their parents might help.

### *7.1 Learning Satisfaction dimension*

The online platform is serving as an informal support system for the learners to fill up gaps in the formal education system in Bangladesh. From the survey data and observation from the students' social media contents, it can be said that most of the learners are satisfied with what they learn from the platform. Though the platform is only using multiple-choice questions to evaluate the learning; most of the students think that the online platform is helping them to perform better in their academic life. However, student evaluation of learning is a students' perception of how much they learned from the online learning platform, which can be significantly different from the grades they are receiving in their schools (Zhao et al., 2005). However, learners in this study are considering the learning contents helpful if it helps them perform well in the platform's assessment quizzes and formal examinations in school. The explanation is given for wrong answers, and they also can see their average scores compared with other quiz takers in the online learning platform's assessment. However, it is hard to get an idea from this

research about how the platform helps learners enhance their critical thinking ability and problem-solving skills. Further study scope is present in this particular area.

“Computer programmed instruction trains students to work individually as he will demand active participation in the learning process. Since technology has come to integrate the teaching-learning process, computer-assisted instruction has emerged as an application of Behaviourism (Lawrence, 2005, 32 p.28)”. Yet, the only focus on the behaviouristic approach can lead to surface level learning, which may create a lack of motivation for the learners, eventually if the learning contents do not seem attractive to them. The platform also does not provide any certifications or badges after completing a course, which may also create a lack of motivation. As far as student motivation is concerned, it is based to a great extent on the students' subjective experiences, i.e., their willingness and personal motives to engage in the learning process (Brophy, 2004). Organizers claim that they are quite particular about the learning content quality they provide via their platform. They maintain a structured evaluation process of the contents. They try to provide high priority on the basic concepts of the subjects they are teaching. However, some researchers argue that different learners have different learning styles; for example, some learners like to visualize more or understand well through discussion. The platform does not provide different options for different learning styles based on learning style and academic compatibility since the videos do not have text, illustrations and not compatible with the learners with disabilities.

Moreover, the organization of the learning content in the platform is more like library-based rather than goal-based. The instructors of the organization upload the contents, and the quality control team publishes the contents after reviewing. Firstly, the native instruction language helping learners to grab the contents easily. Secondly, the contents are mostly developed based on the context of the education system of Bangladesh. These two features make the platform unique from other international platforms, and learners find it more useful and easier to use the learning content than other famous international platforms.

### *7.2 Teaching satisfaction dimension*

The platform is focused on the context and culture of Bangladesh, which is one of the factors that might be helpful to make learners more satisfied with the teaching style and the delivery of the contents methods. Culturally responsive teaching uses “the cultural characteristics, experiences, and perspectives of ethnically diverse students as conduits for teaching them more effectively” (Gay, 2002, p.106). The instruction medium of the online learning platform is in Bangla (native language), which helps learners understand the concepts of the learning material with less effort. Teachers are successful in building their social presence on the platform by sharing their profile at the very beginning of the lecture and delivering lectures in a friendly approach. Teaching presence is defined as 'the design, facilitation, and

direct instruction of cognitive and social processes to realize personally meaningful and educationally worthwhile learning outcomes' ( Anderson et al., 2001, p.5). Students from remote areas feel enlighten to receive online education from qualified teachers that might not be available for them in face-to-face classrooms. However, they have limited options to ask the instructor directly and get individual feedback in the online learning environment.

The major advantages of online education lie in its flexible form to conveniently expand teaching scale and reduce teaching cost (Liao, Y. ,2015; Bruff et al. 2013). However, it has been an obvious problem that how to select the right teacher's course for student' learning, so teaching quality assessment has been one of the most important aspects in online education (Carlson, E. S.,2014; Daelen et al.,2016; Liao, Y. ,2015). According to the organizers, "10 minutes school" has a well-structured recruitment process for choosing the right resource person. There is a possibility that organizers might be biased on the given answer. However, they have explained their recruitment process in detail, which adds support for their answer's validity. The online instructor must go through multiple steps to be qualified to teach online via the platform. The instructor chooses how much time they want to teach as per their availability and convenience. Therefore, they get a fair amount for time to prepare themselves.

Moreover, instructors get regular training from time to time. However, they have a large target group, so it becomes challenging to give feedback. Sometimes, they have to pass through several layers to provide feedback. Moreover, different teachers have different teaching styles. This platform has a specific template of delivering lectures, which might be quite challenging to adopt for some teachers. The flexibility of instruction design may increase teaching satisfaction. A study on the prospect of online education in Bangladesh found the instructor's ability to choose an appropriate delivery system by focusing on the learners' needs and the content requirements crucial for online learning success (Rahman et al., 2015).

### *7.3 Interaction satisfaction dimension*

Interaction satisfaction dimension the results from the quantitative analysis showed that students are dissatisfied with all sorts of interaction needed for online learning - interaction with instructors, peers, and learning contents. The interaction satisfaction dimension has the lowest average value and the highest standard deviation value. The social media groups serve as a chatroom, where participation is the primary goal (Garrison & Cleveland-Innes, 2005). Learners who like to learn individually they might not consider it as a problem. On the other hand, some learners find it necessary to interact for a better learning experience. The platform mostly using social media to interact with learners. It might be distracting for some learners, and also sometimes, it is difficult to organize in a structured manner to have a critical discussion, which very important. The indirect nature of interaction in terms of its impact

on learning is also significant (Goodyear, 2002). Cognitive affect and learning outcome connected to the learning situation where interaction can play as a critical intervening variable (Thorpe & Godwin, 2006). So, developing an official forum for the learning community may help to give learners to communicate better. Well-structured interpersonal interaction and collaboration can trigger cognitive mechanisms that generate cognitive effects (Dillenbourg, 1999).

On the other hand, organizers are also finding most challenges regarding communication and interaction. From the qualitative analysis, all the different departments' roles face the most challenges regarding communication and interaction. Firstly, they have a huge target group to communicate (around 1million students). Secondly, all the departments do not have direct involvement with the students. Sometimes they have to pass through several layers, and that creates communication gaps sometimes.

Moreover, the organizers struggle to get the right feedback from the learners; for example, some learners with low computer efficacy cannot find the root cause of their problem. That sometimes causes delayed feedback. Research indicates timeliness of tutor response in support of students was the second most highly rated of a variety of interactive indicators (Northrup, 2002). To conclude, the platform has scopes to improve the interaction and communication within the teams and also with the learners. More research is needed to innovatively use technology to mediate the learning interaction (human level and with the text) without creating distractions. Effective online instruction design facilitates clear discussion thread, avoids disjointed mono-loges, and moves the discussion through inquiry phases (Garrison & Cleveland-Innes, 2005).

### *7.4 User Experience satisfaction dimension:*

Most learners find the learning platform easy to navigate and do not have any difficulty finding their desired content. User experience is a significant aspect of online education. Learning online needs a higher cognition level for deep learning and develop critical thinking abilities (Garrison & Cleveland-Innes, 2005). Hence, bad user experience can create major issues with the learning experience of the learners. If an e-learning system is not usable enough, it obstructs learning: the learners would not spend more time learning how to use the software rather than learning the contents (Wong et al., 2003).

However, no end-user research has been done yet from the user experience perspective on this platform. The end-user support team is the primary contact for the learners. They have to communicate with multiple team members to solve issues. That creates communication gaps sometimes. Most of the learners' preferred devices are mobile, and organizers also prioritize user experience of the mobile application. There are 95.168 million mobile internet subscribers of 103.253 million 35 internet subscribers (source: http://www.btrc.gov.bd/) in Bangladesh. So, encouraging mobile learning will help

to get more accessibility and reachability. Learning environments at elementary and higher education levels in developing countries can utilize mobile learning for informal and mainstream education (Traxler, 2009). Overall, "most of the researchers found that learners in the developing countries were excited and motivated by the notion of using mobile devices for learning" (Imtinan et al., 2012, p.167). A study on online education in Bangladesh stated, “Realizing the widespread use of mobile devices in Bangladesh, one of the ways to accelerate the acceptance of e-learning is to influence mobile technology's use to support mobile learning. Mobile learning will also help overcome the problem of accessibility and connectivity" (Al-Masum & Chowdhury, 2013, p. 88). For the time being, they are using technical methods and play store comments to improve the user experience of the mobile application. A study done on online education in Bangladesh found that receiving feedback from students should be considered continuously while designing and implementing ICT-based education for successful implementation (Al-Masum & Chowdhury, 2013).

### *7.5 Attitudes*

Attitude plays a significant role in adopting any innovation. If the platform can be built a positive attitude towards online learning, it will help to increase the actual usage. The qualitative data from the organizer's interview give a mixed result about the learner's attitude. For this master study learner's attitude has not been measured from the learner's perspective, which is one of the limitations. In the context of Bangladesh, online education is gradually becoming popular. For this moment, educational content serving as a support system for learners apart from academic education. Online education still not considered a medium of mainstream learning. The online platform is a private organization that is not connected with any formal educational institution. Since the platform is developed based on the academic syllabus of Bangladesh, integrating with the traditional educational institutions will increase the platform's validity. Hence, the learners and their guardians will have a more positive attitude towards the platform.

### *7.6 Future contents*

Learners have chosen academic content as their most desired learning module. However, the platform is not a substitute for a traditional school. The learners choose to learn from the platform individually, but they are enrolled in a traditional local school too. Quality academic contents provided by the platform can serve as a solution to several educational problems, including crowded schools, a shortage of secondary courses for remedial or accelerated students, a lack of access to qualified teachers in a local school, and the challenge to accommodate students who need to learn at a pace or in a place different

from a school classroom (Cavanaugh et al., 2007). The platform is able to play a significant role in providing high-quality learning opportunities, allowing students for educational choice, and improving students' outcomes and skills (Cavanaugh et al., 2009).

### *7.7 Device*

Most of the learners' preferred devices are mobile, and organizers also prioritize user experience of the mobile application. There are 95.168 million mobile internet subscribers of 103.253 million internet subscribers (source: http://www.btrc.gov.bd/) in Bangladesh. So, encouraging mobile learning will help to get more accessibility and reachability. Learning environments at elementary and higher education levels in developing countries can utilize mobile learning for informal and mainstream education (Traxler, 2009). Overall, "most of the researchers found that learners in the developing countries were excited and motivated by the notion of using mobile devices for learning" (Imtinan et al., 2012, p.167).

# 8 Conclusion

The technology acceptance model (TAM) has been a good way to structure the research work to visualize the satisfaction dimension influencing the perceived usefulness and perceived ease of use of the platform. The interaction dimension (learner-learner; learner-instructor; learner-content) was found most critical; both the organizers and learners were struggling. Since the students do not have to pay to use the platform, it can be beneficial for Bangladesh's education system, where educational inequality is a huge problem due to poverty. Overall, due to the openness and relevance with country context, the platform "10-minute school" has excellent potential to provide high-quality learning opportunities for Bangladesh's mass population.

## 8.1 Limitation of the study

It is quite challenging to analyze an open online learning platform as so many dependents and independent factors and fields are interconnected. Hence, the design of e-learning applications deserves special attention, and designers need appropriate guidelines as well as effective evaluation methodologies (Zaharias et al.,2002). However, in this thesis, among so many factors, the constructs to analyse the online learning platform's satisfaction have been chosen depending on practical limitations, the context, and available literature. Only descriptive statistics have been used to get a rough idea of the overall situation. Further research is needed to investigate how the different groups of online learners with their specific intentions can be addressed by providing personalized learning experiences and

assessing the impact of open education in our society. Age, gender, culture, computer efficacy, education level, and many more factors can influence the online study experience, which has not been considered. 37 Moreover, the study has been done on one specific open online educational learning platform. A study and comparison of two of more platforms would have shown a more diverse result. However, the platform studied here has the largest number of subscribers compared to other learning platforms of Bangladesh.

### 8.2 Future Study

There are two significant limitations of the research presented in this chapter that indicates areas where future research should be directed. The first limitation of the study is that it focuses on learners associated with a single open online educational platform. Future research should broaden the study to include more students; both students enrolled in an online platform and chose not to enroll. Including both groups of students in the study will provide more insight into how students decide to register online. Future studies should also include more online educational platforms, both paid and unpaid. Online student needs can be met in a variety of ways. By including multiple online educational platforms, researchers can begin to investigate and evaluate the different support models for effectiveness. The second limitation of the study is that it is exploratory research done on considering some fixed satisfaction dimensions in a unidirectional way. Future research should include explanatory study that measures how the satisfaction dimensions affect learning outcomes and do some end-users research considering the learner's background and observing students from the beginning of the study through its completion. Such a study would provide insight into as well as a more developed view of the student experience.

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Appendix

Interview questions for organizers

1. How are the general attitudes towards the platform of the learners?

2. How are the examinations are performed, and what are the results it gives?

3. Do you have any template/ specific learning theory that you are following?

4. How do instructors provide feedback to the students?

5.How much time do they spend preparing the materials?

6. How do you find the right resource person?

7.What kind of feedback/responses do you receive from the learner?

8. How you take care of the learner's responses?

9. 1. How do you get feedback from end-users?

10.What kind of feedback you receive most from the users?

11.How do you take care of the user experience?

12. What are the most frequent issues do you face?

13. How you solve technical issues?

14. How you keep the online platform technically updated?

15. What is the long-term goal of "10-minute school"?

16. What is the mission and vision of "10-minute school"?

17. What do you think about the gender balance in e-learning?

Survey link -Survey link